

REMARKS

This application has been carefully reviewed in light of the Office Action mailed on October 4, 2002. Claims 70-86 are canceled. The application now contains claims 87-96. Claim 90 has been amended. A marked-up version of this claim, showing changes made, is attached hereto as Appendix A. Applicant reserves the right to pursue the original claim and other claims in this and other applications. Reconsideration of the above-referenced application in light of the amendments and following remarks is requested.

The drawings are objected to under M.P.E.P. § 608.02(g). Figures 1 and 2 have been amended as required by the Office Action in Applicant's "Request for Approval of Proposed Drawing Amendments" filed concurrently herewith.

Claim 90 is rejected under 35 U.S.C. § 112, 2nd paragraph as lacking sufficient antecedent basis. Applicant has amended claim 90. Claim 90 is now believed to be in proper form. Specifically, claim 90 has been amended to recite a "layer of magnetic field shielding material is formed on both a bottom surface and a top surface of said chip carrier."

Claim 87-88 and 90 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nakagawa. Reconsideration is respectfully requested. Nakagawa does not disclose a method of forming a chip carrier that supports an integrated circuit chip and which has magnetic shielding for the chip. The reference is directed toward the manufacture of a printed circuit board (Col. 6, lines 24-25). There is also no suggestion for forming a chip carrier with a chip which is magnetically shielded. Therefore, the rejection of claim 87 should be withdrawn.

Claims 88 and 90 depend from claim 87 and should be allowable along with claim 87 and for other reasons. Nakagawa does not teach or suggest a "layer of magnetic field shielding material is formed on both a bottom surface and a top surface of said chip carrier" as recited by dependent claim 90. In fact, Nakagawa teaches that "the results of

experiments conducted by the inventors et al. show that these layers (cl. 22,26) may be formed on only one of the surfaces of the base plate 12.” (Col. 18, lines 13-15) (emphasis added). This is an additional reason claim 90 should be allowable.

Claim 89 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakagawa in view of Fukuoka. Reconsideration is respectfully requested. As discussed previously, Nakagawa teaches a method of forming a printed circuit board and not a chip carrier which has a magnetically shielded chip. Claim 89 depends from claim 87 and is allowable for at least the reasons set forth above.

Further, the combination of Nakagawa and Fukuoka is improper. The two references are directed to solving different problems. Nakagawa provides a method of forming a printed circuit board with reduced electromagnetic interference. Fukuoka provides “a substantially lead-free multi-chip module and production method thereof . . . [that] does not contaminate the environment owing to lead even after the disposal thereof.” (Col. 6, lines 50-56, and Col. 5, lines 2-39).

Moreover, the Office Action asserts that Fukuoka discloses a multiple-layered PCB comprising an embedded magnetic field shielding material layer. For support, the Office Action points to Fig. 1, el. 104. Fukuoka does not disclose any magnetic field shielding materials, much less a magnetic field shielding material layer. Further, elements 104 of Fukuoka are wiring circuits connected to mounting pads 105 and not magnetic field shielding material layers. There is simply no support that wiring circuits 104 are magnetic field shielding material layers. Therefore, the rejection of claim 89 should be withdrawn.

Claims 91-96 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakagawa in view of Tracy. Reconsideration is respectfully requested. As discussed previously, Nakagawa teaches a method of forming a printed circuit board and not a chip carrier which has a magnetically shielded chip. Claims 91-96 depend from claim 87 and

are allowable for at least the reasons set forth above.

Further, the combination of Nakagawa and Tracy is improper. There is no motivation to use magnetic field shielding materials comprising ferrites, manganites, chromites, or cobaltites in Nakagawa. Nakagawa teaches that “[t]he copper ink layer 22’ and the solder layer 26 can thus function together against electromagnetic interference.” (Col. 13, lines 6-8) (emphasis added). Further still, the solder layer 26 merely “mechanically reinforces the copper ink layer 22’.” (Col. 13, lines 38-39). The composition of the copper ink layer used in Nakagawa is important. Nakagawa discloses the importance of the composition through tables 1-6. Accordingly, there is no motivation to use other materials. Therefore, the rejection of claims 91-96 should be withdrawn.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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APPENDIX A

90. (amended) The method of claim 87, wherein said layer of magnetic field shielding material is formed on both a bottom surface and a top surface of said [printed circuit board] chip carrier.